

CLAIMS

1. A method for registering a mobile unit with a communication system including a serving system and a home system, the serving system comprising a mobile switching center (MSC) and an interworking MSC (iMSC), the iMSC including at least one Media Gateway (MGW) that is controlled by the iMSC, the home system comprising a Gateway MSC and a Home Subscriber Server (HSS), the method comprising:
- performing a location update procedure by the mobile unit;
- processing by the serving system the registration by authenticating the mobile unit and informing the HSS of the location of the current serving system; and
- determining that the serving system must process the mobile unit as an MSC.

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2. A method for registering a mobile unit in accordance with claim 1, wherein the step of performing a location update procedure is done to indicate a change in the serving system.

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3. A method for registering a mobile unit in accordance with claim 1, further comprising the step of originating a call with the serving system.

10 4. A method for registering a mobile unit in accordance with claim 3, wherein the step of originating a call with the serving system comprises:

receiving a call request at the serving system; and
performing interworking between call control
15 procedures in the serving system and a Public Switched Telephone Network (PSTN).

5. A method for registering a mobile unit in accordance with claim 1, further comprising the step of performing
20 features and services for the mobile unit within the serving system.

6. A method for registering a mobile unit in accordance with claim 1, further comprising the steps of:
25 receiving a call termination by the home system; and
forwarding the call termination to the serving system.

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7. A method for registering a mobile unit with a communication system including a serving system and a home system, the serving system comprising an interworking MSC (iMSC) and an Internet Protocol

- 5 Multimedia Subsystem (IMS), the home system comprising a Gateway MSC (GMSC) and a Home Subscriber Server (HSS), the method comprising:

performing a location update procedure by the mobile unit;

- 10 processing by the serving system the registration by authenticating the mobile unit and informing the HSS of the location of the current serving system;

determining that the serving system must process the mobile unit as an iMSC; and

- 15 emulating the services of the MSC by the IMS.

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8. A method for registering a mobile unit in accordance with claim 7, wherein the step of performing a location update procedure is done to indicate a change in the serving system.

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9. A method for registering a mobile unit in accordance with claim 7, further comprising the step of originating a call with the serving system.

10 10. A method for registering a mobile unit in accordance with claim 9, wherein the step of originating a call with the serving system comprises:

receiving a call request at the serving system;
performing interworking between call control

15 procedures between the iMSC and IMS;

forwarding the call to a Border Gateway Control Function (BGCF) and Media Gateway Control Function (MGCF); and

20 interworking between the MGCF and a Public Switched Telephone Network (PSTN).

11. A method for registering a mobile unit in accordance with claim 7, further comprising the step of performing features and services for the mobile unit within the IMS
25 in the serving system.

12. A method for registering a mobile unit in accordance with claim 7, further comprising the steps of:

30 receiving a call termination by the GMSC in the home system;

forwarding the call termination to the IMS in the serving system; and

forwarding the call termination to the iMSC in the serving system.

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13. A method for registering a mobile unit in accordance with claim 12, wherein the step of forwarding the call termination to the IMS comprises:

forwarding the call termination from the GMSC to the
5 MGCF;

forwarding the call termination from the MGCF to the I-CSCF; and

forwarding the call termination from the I-CSCF to the S-CSCF.

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14. A method for registering a mobile unit with a communication system including a serving system and a home system, the serving system comprising a mobile switching center (MSC), the home system comprising an

- 5 Internet Protocol Multimedia Subsystem (IMS) and a Home Subscriber Server (HSS), the method comprising:

performing a location update procedure by the mobile unit;

- 10 processing by the serving system the registration by authenticating the mobile unit and informing the HSS of the location of the current serving system;

determining that the serving system must process the mobile unit as an MSC; and

emulating a Gateway MSC by the IMS.

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15. A method for registering a mobile unit in accordance with claim 14, wherein the step of performing a location update procedure is done to indicate a change in the serving system.

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16. A method for registering a mobile unit in accordance with claim 14, further comprising the step of originating a call with the serving system.

10 17. A method for registering a mobile unit in accordance with claim 16, wherein the step of originating a call with the serving system comprises:

receiving a call request at the serving system; and
performing interworking between call control

15 procedures in the serving system and a Public Switched Telephone Network (PSTN).

18. A method for registering a mobile unit in accordance with claim 14, further comprising the step of performing
20 features and services for the mobile unit within the serving system.

19. A method for registering a mobile unit in accordance with claim 14, further comprising the steps of:

25 receiving a call terminations by the IMS in the home system;

emulating GMSC call termination services; and
forwarding the call termination to the serving
system.

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20. A method for registering a mobile unit in accordance with claim 19, wherein the step of forwarding the call termination to the serving system comprises:

forwarding the call termination from the S-CSCF to a
5 BGCF; and

forwarding the call termination from the BGCF to the MGCF for delivery to the MSC.

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21. A method for registering a mobile unit with a communication system including a serving system and a home system, the serving system comprising a mobile switching center (MSC) and an interworking MSC (iMSC),
- 5 the home system comprising an Internet Protocol Multimedia Subsystem (IMS) and a Home Subscriber Server (HSS), the method comprising:
- performing a location update procedure by the mobile unit;
- 10 processing by the serving system the registration by authenticating the mobile unit and informing the HSS of the location of the current serving system; and
- determining if the serving system can process the mobile unit as an iMSC.

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22. A method for registering a mobile unit in accordance with claim 21, wherein the step of performing a location update procedure is done to indicate a change in the serving system.

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23. A method for registering a mobile unit in accordance with claim 21, further comprising the step of originating a call with the serving system.

10 24. A method for registering a mobile unit in accordance with claim 23, wherein the step of originating a call with the serving system comprises:

receiving a call request at the serving system;
performing interworking between call control

15 procedures by the iMSC in the serving system and the IMS in the home system; and

forwarding the call from the IMS to the called party.

20 25. A method for registering a mobile unit in accordance with claim 21, further comprising the step of performing features and services for the mobile unit within the IMS in the home system.

25 26. A method for registering a mobile unit in accordance with claim 21, further comprising the steps of:

receiving a call termination by the IMS in the home system; and

30 forwarding the call termination to the iMSC in the serving system.

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